

Searches for exotic QCD bound states with ALICE at the LHC

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The high energy densities reached at LHC lead to the production of a significant amount of light hypernuclei as well as (anti-)nuclei which are consequently observed in several collision systems, namely from proton-proton (pp), to proton-lead (p-Pb) up to lead-lead (Pb-Pb) collisions. Several potentially existing exotic QCD bound states, such as the H- dibaryon, could be produced and they feature many similarities to known hyper- and anti- nuclei. The excellent particle identification performance of the ALICE experiment allows for the possible detection of these rarely produced particles. The presence of the Inner Tracking System detector close to the interaction point, enables the primary produced particles to be distinguished from the ones coming from other sources such as weak decays. In this contribution, the expected production rates for exotic states based on the latest ALICE measurements of (anti-)nuclei and hyper-nuclei and their comparison to theoretical model predictions will be discussed first. Then the estimated upper limits for the Λ_n and H-dibaryon exotic bound state production will be presented. Finally the expected improvements in such measurements with the increased statistics and performance in the next LHC Run periods will be discussed.

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